

# **INTERIM REPORT**

**UPON THE PROPOSED PURCHASE  
BY THE CITY OF TORONTO OF  
CERTAIN STREET RAILWAY AND  
ELECTRIC LIGHT AND POWER  
INTERESTS**

**JOHN MACKAY**

**TORONTO  
NOVEMBER, 1913**

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JOHN MACKAY & CO.  
TORONTO.

Toronto General Trusts Building,  
85 Bay Street,  
17th November, 1913.

His Worship the Mayor,  
City Hall,  
Toronto.

INTERIM REPORT  
ON PROPOSED STREET RAILWAY AND  
ELECTRIC LIGHT PURCHASE

Dear Sir,

You have, on behalf of the Corporation of the City of Toronto, instructed me to advise the City upon the financial and the general merits of the proposed purchase of the Street Railway and the Electric Light and Power interests, as such are set forth in the governing correspondence which you submitted to the City Council on the 13th ultimo. The general lines of an agreement are laid down in the said correspondence, subject, however, to the settlement later of a large number of most important questions and details. You have also furnished me with copies of these documents, with the Arnold-Moyes Report on the Street Railway System, with R. A. Ross & Company's valuation of the physical assets of the Toronto Electric Light Company, Limited, and with copies of Mr. Forman's valuations of the real estate of the respective companies; and you have instructed me to accept the conclusions of these gentlemen on the particular questions submitted to them, subject, of course, to the right which I reserved of questioning any conclusion with which I might not agree.

(2) During the first interview we had on this matter, I informed you that while I approved of the general policy of purchase, I would none the less require to advise against it, in the event of investigation indicating that it would be disadvantageous to the City on the terms proposed, or in any other way. You instructed me definitely at that time, and also on later occasions, that you did not wish the proposed scheme of purchase carried through unless it could be shewn to be clearly in the interests of the City that such should be done.

(3) The project, if carried out, involves an immediate expenditure of \$30,000,000, and the obligation to expend additional capital in large amounts, from time to time, to develop the properties proposed to be acquired, in respect of all of which sums the public credit must be pledged. The transaction in question is, therefore, one of great magnitude, and of great moment to the interests of the City and the Ratepayers. It should neither be lightly undertaken nor lightly rejected. If the transaction is capable of conferring substantial benefits upon the City, a rejection thereof on mistaken or on insufficient grounds would be a most

serious mistake, by reason of the forfeiture thereby of such gains; while, on the other hand, if its completion should be injurious to the interests of the City, an acceptance thereof on mistaken or insufficient grounds would involve the City in the heavier positive penalties. The responsibility attached to a sound decision is, therefore, heavy. It is doubtful if, in the corporate history of the City, any single transaction of such moment to its interests has ever been dealt with. I am very sensible of the responsibility of advising under these conditions. I have, therefore, so far as the limits of time and facilities permitted, carefully investigated and considered the whole matter. I have also had the benefit of personal consultations with Messrs. Arnold and Moyes, with Mr. R. A. Ross, and with Mr. H. H. Couzens, the General Manager of the Toronto Hydro-Electric System.

(4) The purchase price of the Railway properties has been fixed at \$22,000,000. The physical assets have been valued by Messrs. Arnold and Moyes at a little over \$10,000,000, thereby leaving a little less than \$12,000,000 of the purchase price as applicable to the franchise rights that would be surrendered to the City. I am advised that the principal franchise, namely, that of the Toronto Railway Company, expires definitely on the first of September, 1921, and that the principal franchises of the Radial Companies expire in 1921 and 1929, subject to varying terms of renewal. One of the most important questions, therefore, that falls to be decided in connection with the Railway purchase, is that of the reasonableness of the \$12,000,000, which has to be paid for the surrender by the Railway Companies of the nett income which the operation of their systems under their respective franchises, expiring as above, would yield. I found it necessary, in this connection, to have the inquiry into the Street Railway situation carried further than it had been under the Arnold-Moyes report. In that report the value of the future earnings of the Toronto Railway Company and of the City sections of the Radial Companies, had been estimated "to their present owners" upon the assumption that the properties would be operated subject to subway competition by the City.

In view of the fact, however, that the completion of the transaction would, for obvious reasons stated hereunder, do away, certainly for a long time to come, with any question of building subways, it became necessary to ascertain the value of these earnings, under the conditions that will prevail if the City takes over the System under the present proposals. The capital cost of increasing the track and equipment of the Toronto Railway Company to accommodate the increasing traffic until 1921, had also been estimated and allowed for in determining the franchise value in the said report. The Toronto Railway Company's system, however, is substantially confined to the limits of the City as it stood in 1891, and, therefore, these additions and their cost, were limited to this restricted area. Large territorial additions have been made to the Municipality since that date, and in these districts the street railway facilities are notoriously inadequate. The Assessment Department estimates the population of the districts which have been annexed since 1891 at nearly 75,000, and in all probability, when the transient visitors at certain seasons of the year are taken into account, it will be found that not less than 85,000 people reside therein, who are very imperfectly served by the existing transportation facilities. That is to say, that a community as great in numbers at such times as the City of Ottawa, is without street railway facilities, except in so far as such are furnished by the limited

Radial Systems and by the limited Civic Car System recently established. And, of course, the use of the different systems on a continuous journey involves the payment by the traveller, of as many fares as there are systems.

The independent construction and operation by the City of adequate transportation facilities in the districts in question, is, under present circumstances, a costly and unprofitable undertaking. The consummation of this transaction, however, would obviously leave the City free to carry out a well-conceived and symmetrical plan of street railway extension adapted to the needs of the whole of the City, including the districts mentioned, and by reason thereof, would do away with any need, in the meantime, for building the Yonge Street tube or subway. The financial effect, therefore, upon the whole project, of carrying out such an extension and unification of the transportation systems of the City, had to be ascertained in order to determine whether the transaction as a whole, would, or would not be profitable. To put it shortly—Would the ascertained value of the future earnings till 1921 of the Toronto Railway and other systems be increased or decreased by the added income and charges arising out of the necessary extensions?

I have, therefore, had additional estimates prepared by Mr. Bion J. Arnold, of Chicago, of:—

(a) The capital cost of enlarging and consolidating the whole surface traction system of the City, on a scale adapted to the requirements of its population up till the year 1921;

(b) The nett income therefrom which should accrue to the City up till the year 1921, from the ownership of the consolidated system;

(c) The capital cost of providing the necessary additional street railway facilities in the outlying districts, upon the assumption that the proposed purchase is not carried out; and

(d) The annual loss up till the year 1921, that will probably accrue from the independent operation by the City of such lines in conjunction with those of the existing Civic Car System.

I am bound in honor to state at this point that these additional estimates would have been prepared by Mr. Arnold and submitted in his original report, had he understood that his instructions covered them. He did not, however, so understand his instructions. I had ample opportunities, while engaged on this work in Chicago, with Mr. Arnold, to ascertain his status in that City, and to appraise the calibre of the man himself and of his assistants. I came to the conclusion that he is a gentleman of the highest standing and competence—absolutely trustworthy—and that his assistants who were associated with the detail work, are men of like type. The fullest confidence, therefore, may, in my opinion, be placed in any estimate or conclusion for which Mr. Arnold assumes responsibility.

I should state at this point that the real estate of the Railway Companies has been valued by Mr. Forman, the Assessment Commissioner, and that it is included by Messrs. Arnold and Moyes in their total valuation of the physical assets at a little over \$10,000,000, as above mentioned.

(5) The purchase price of the Toronto Electric Light Company's interests has been fixed at \$8,000,000. The physical assets located within the limits of the City, have been valued by Messrs. R. A. Ross and Company, of Montreal, and the real estate by Mr. Forman, the Assessment Commissioner, at the total sum of \$6,045,000, thus leaving the sum of \$1,955,000 as the price payable for the surrender of the Company's franchise rights. I am advised that the Company owns, in effect, a perpetual franchise, which can only be acquired by the City under an amicable bargain, or by arbitration in November, 1919, and at stated periods of twenty years thereafter.

The principal questions, therefore, to be considered in connection with the purchase of this undertaking, are, as to whether the purchase would promote or retard the interests of the local Hydro-Electric System, and as to whether the total purchase price can be justified by the earning power of the business under the governing conditions of City ownership, operating at cost.

(6) I have had full and free access to the books of the Toronto Electric Light Company, Limited, and I have had full access to the books of the Toronto Railway Company, in so far as such was required to supplement the information furnished by the Arnold-Moyes report.

(7) After careful consideration of the underlying facts, I have reached the following conclusions, which I now respectfully submit, namely:—

(1) That the gross income of the Toronto Electric Light Company, on the level of the rates in force during 1912—which were lower on the average than the Hydro-Electric rates—allowing for a minimum rate of annual increase in sales, and after allowing for administrative savings, resulting solely from consolidation, of \$100,000 per annum, and further administrative savings of the Hydro-Electric System to the amount of \$50,000 per annum, proceeding solely from the economies attendant upon consolidation, should provide for:—

(a) The cost of electric current supplied under the existing contract, which terminates in 1919, at the average rate shewn by the books of the Company for the present year; and the cost of like current from 1919 on, under a proposed new contract, which should reduce the cost thereof to substantially the same rate that the Hydro-Electric System would now be under, if it operated under like load conditions,

(b) All operating and administrative expenditure, including taxes,

(c) The entire replacement at the end of its useful lifetime, out of income, of the whole of the existing plant,

(d) An accumulating fund to replace at the end of its useful lifetime, the new plant which will take the place of the existing plant, as it wears out,

(e) Interest and sinking funds on the thirty-year debentures proposed to be issued to cover the purchase price,

(f) Interest and sinking funds on the additional debentures which will require to be issued from time to time to cover the additional capital expenditure which will require to be made periodically to take care of the increasing business,

(g) An accumulating replacement fund to renew at the end of its useful lifetime, the new plant acquired by means of the said additional capital expenditure,

and should yield a nett surplus in thirty years, at the maturity of the \$8,000,000 of purchase price debentures, (and after the redemption thereof by means of the sinking fund), of over \$11,000,000. If the rates were reduced from time to time to prevent the accumulation of this surplus, the nett reductions thereof would run from 6% in 1925 to 14% in 1943.

(2) The above surplus takes no account of further considerable savings that will accrue from economies that will be effected by the combined operation of the physical plants, after the systems are completely linked up and reduced to their ultimate engineering conditions, nor for the additional substantial savings in the cost of power that will be realised if the total quantity purchased on behalf of the consolidated Street Railway System and the consolidated branches of the Electric Light and Power System, is made available under the contract conditions for the common use of these services.

These additional savings, which cannot be reduced to figures until after the exact terms of the power contracts are finally agreed upon, nor until after the practical work of consolidation is finally accomplished, should permit of further reductions of rates in addition to, and commencing earlier than, the foregoing.

(3) The consolidation of the System with that of the Hydro-Electric System will yield like economies in the latter branch of the combined undertaking. That is to say that in addition to the initial savings in administrative expenses, which have been taken credit for to the extent of \$50,000 per year in the above estimate, (because they result exclusively from the proposed consolidation), there should be further substantial savings to the Hydro-Electric System in the operating expenses, and in the cost of current under the contract conditions above assumed.

There is, further, the very great advantage which cannot be easily measured or expressed in monetary terms, of the cessation of duplicate construction and of the installation of duplicate plants, the effect of which will greatly limit the new capital expenditure of the combined systems as compared with that which would be incurred under independent concurrent operation. This, in turn, reacts advantageously upon the annual income, by reducing the depreciation, the interest and the sinking fund charges that would otherwise have to be provided.

(4) The consolidation, therefore, of the two Systems under a single management, under a common scale of rates fixed in accordance with the cost of the various classes of service, under the reduced operating costs that would follow, and especially under the greatly reduced capital expenditure attendant thereon, would,

I think, with the growth of the business, lead to common reductions of rates for the benefit of all consumers, and arising from substantially equal contributions to the common good from each branch of the combined system.

(5) That, failing the completion of the proposed purchase, the City would probably have to pay at least about \$2,000,000 extra for additional physical assets if it elected to buy in 1919 under the franchise agreement, and, in addition, it would require to compensate the Company for the surrender of its perpetual earning power. Failing purchase then, it would have to wait for twenty years longer for another compulsory chance. Like results would then follow, as in my opinion, after specially investigating the point, the competing power and resources of the Toronto Electric Light Company are quite equal to any strain that the Hydro-Electric System may place upon it. In the final analysis, therefore, I think that lower rates will, in the long run, follow from consolidation than could by any possibility be obtained without it.

(6) That if the existing Toronto Railway Company's System is linked up with the existing Civic System and the existing Radial Lines, and enlarged from 147 miles of track (the combined city mileage of all tracks at present) to 283 miles in 1921, with corresponding increases in car capacity, etc., and operated as a single consolidated system, to give a proper and an adequate unified service throughout the whole limits of the City on a single fare basis from any point to any point, with the usual transfer privileges, the nett annual surpluses thereof, when set aside and invested as a sinking fund - after providing for all operating costs, including taxes and replacement charges, for interest on the purchase price and interest on the new capital required for the extensions (including all like charges resting on the existing Civic System), and after paying to the City upwards of \$13,000,000 in respect of the share of traffic receipts it is entitled to under its existing agreement with the Toronto Railway Company—should amount, by the first of September, 1921, to the sum of substantially \$11,500,000. That is to say that the City should, by the 1st September, 1921, have received upwards of \$13,000,000 in cash in lieu and as the equivalent of the percentage of gross receipts which it is entitled to receive from the Toronto Railway Company, and in addition thereto, it should have received surplus cash income which, invested as a sinking fund, would amount to sufficient to redeem at par, by the date named, \$11,500,000 of the bonds issued in respect of the whole Railway undertaking. This is the equivalent of a return to the City of \$11,500,000 of the \$12,000,000 paid for the franchise rights, after providing for a replacement fund to renew track and equipment as they wear out.

On a stationary traffic from 1921 on, the nett receipts should, after bearing all operating, replacement, interest and sinking fund charges, and after paying \$2,300,000 yearly into the City Treasury, in continuation of the existing arrangement with the Toronto Railway Company, leave a surplus of over \$2,000,000 yearly. If this surplus of \$2,000,000 were applied to the reduction of fares, the average fare per passenger would at once be reduced to about 3½ cents. Of

course, the traffic, as a matter of fact, will continue to increase, yielding in return, additional surpluses and in consequence further reductions in fares.

For the past twenty years the annual cost to the City of constructing and maintaining the Railway pavements and track substructures, over and above the compensation paid therefor by the Railway Company, has been less than 20% of the City's share of annual receipts. Therefore, the above continuing payment to the City of \$2,300,000, would be subject, on the basis of past experience to a pavement charge of less than 20%, and the balance would go permanently to the relief of the Ratepayers.

(7) That, failing the completion of the above purchase, the nett loss of the existing Civic System till 1921, together with the additional losses involved in an adequate extension thereof, if such is made, will amount, excluding provision for sinking funds, to approximately, \$2,750,000.

(8) That, therefore, the completion of the Railway purchase will save the City the sum of \$3,250,000, without mention of other substantial collateral advantages.

(8) The above is based upon a continuation of normal industrial conditions, upon an assumed monopoly of ~~the~~ traction in the City, upon competent management freed from all municipal and political influence or interference, upon a contract of purchase satisfactory on all points being entered into, including provision for the payment of the purchase price of \$30,000,000, by an issue to the vendors of a like amount of  $4\frac{1}{2}$  thirty-year debentures at par, upon a satisfactory interpretation of the existing power contracts between the Toronto and Niagara Power Company on the one hand, and the Toronto Electric Light Company and the Toronto Railway Company on the other hand, upon a satisfactory new power contract being entered into to become effective in the case of the Toronto Electric Light business from 1919, upon four and one-half per cent. ( $4\frac{1}{2}$ %) investments being secured for the sinking funds by issuing the initial bonds subject to call at par for sinking fund purposes, and upon the usual forty-year  $4\frac{1}{2}$ % debentures being issued for all additional capital required at a price costing the City not more than 5% with the right of redemption at par for sinking fund purposes. I am unable to measure or to allow for, because I cannot limit the effects of, bad or mediocre management. Bad management eats like a cancer into the whole organism of an enterprise. The City must choose between high-class commercial management with the results indicated herein, and inferior management with losses I am not competent to measure. But unless it chooses the former, it should abandon the proposal.

The values herein are computed as from 1st July last, corresponding to the date of the physical valuations. If the transaction should be completed as from the 31st December, 1913, the nett advantage to the City would be reduced by about \$250,000. The execution of a satisfactory power contract as from 1919, under which the cost of power is reduced to the basis above stated is vital. Subject to the degree in which the special savings accruing to the Toronto Electric Light purchase, but not included in the above estimate, may influence the earnings of the early years, the annual surpluses of the first six years will fall in diminishing degree below the requirements of the annual sinking fund, but thereafter the deficiency will be rapidly made up.

(9) In the foregoing I have summarised a few of the principal facts underlying, and the principal conclusions I have reached upon this important matter. A fuller statement thereof will be presented, with all necessary supporting data, in my formal report now in course of preparation; and in that report proper acknowledgment will be made to all whose assistance I have had.

(10) I have no hesitation in advising the completion of the transaction on the conditions stated herein, nor, in my judgment, is there any need for the Ratepayers or the Light and Power Consumers of the City entertaining the slightest doubt or fear as to the outcome, provided the basic conditions stated are observed.

Respectfully submitted,

(Signed) JOHN MACKAY.



JOHN MACKAY & CO.  
TORONTO.

Toronto General Trusts Building,  
85 Bay Street,  
21st November, 1913.

His Worship the Mayor,  
City Hall,  
Toronto.

RE PROPOSED STREET RAILWAY AND ELECTRIC  
LIGHT PURCHASE

Dear Sir,

I submit herewith appendices to my interim report of the 17th instant, as follows :—

Appendix "A"—Summary of valuation of Toronto Electric Light interests proposed to be purchased.

Appendix "B"—Summary of valuation of Railway interests proposed to be purchased.

Appendix "C"—Study of population growth of the City of Toronto by Professor Mackenzie, Statistician, University of Toronto, Toronto.

Appendix "D"—Opinion by Mr. George Bell, K.C., upon the right of the Toronto Electric Light Company to be compensated for the franchise it holds under governing agreement with the City of Toronto, dated November, 1889.

Appendix "E"—Opinion by Mr. W. M. Douglas, K.C., upon the right of the Toronto Electric Light Company to be compensated for the franchise it holds under governing agreement with the City of Toronto, dated November, 1889.

Appendix "F"—Correspondence with Mr. R. A. Ross, Electrical Engineer, Montreal, upon the condition of the plant of the Toronto Electric Light Company at date as compared with the condition thereof as at the beginning of 1911.

Appendix "G"—Memoranda by Mr. Bion J. Arnold, of Chicago, prepared under my personal supervision, of the capital cost of enlarging and consolidating the Street Railway Systems of the City of Toronto upon a scale adapted to the estimated requirements of the City up till the year 1921, and of the gross and net traffic receipts thereof.

Appendix "H"—Summary of accumulated value at 31st August, 1921, of estimated net surplus of consolidated system after providing for all charges.

Appendix "I"—Summary of accumulated amount of deficits at 31st August, 1921, of the enlarged Civic Car System if built and operated independent of Toronto Railway System.

(2) In connection with the probable growth of the population of the City of Toronto between date and the year 1921, I have deemed it wise to compare the views of Mr. Bion J. Arnold, of Chicago, and of myself upon the matter, with those of a thoroughly experienced and entirely independent statistician, namely, Professor Mackenzie, of the University of Toronto. Professor Mackenzie has in former years made exhaustive population studies both for and in co-operation with myself. He is a gentleman of the highest attainments and qualifications in this field. His study and opinion, which are annexed hereto, were prepared without knowledge of the purpose for which they were desired, and also, of course, without the knowledge of either Mr. Arnold's views or my own.

(3) With reference to the Toronto Electric Light Company, I should say that the Company claims to hold in effect a perpetual franchise, and the tentative arrangement entered into with Sir William Mackenzie appears to have been based upon a recognition of that claim. The amount, however, is such that I could not assume the responsibility of advising either for or against the purchase—whatever the merits of the business might be—without first satisfying myself through entirely independent channels free of association with the traditional views of either the Company or the City, that the legal basis of the Company's claim is sound and stable, and that therefore it is entitled as a matter of law to compensation in respect of the franchise. I have, therefore, in this matter taken the opinion of Counsel, namely, Mr. George Bell, K.C., and Mr. W. M. Douglas, K.C., who, as the annexed correspondence shows, have not been associated at any time either with the Toronto Electric Light Company or the Corporation of the City of Toronto in any questions at issue between these corporations. These opinions agree in sustaining the Company's claim.

(4) All other necessary and proper details including those pertaining to the Electric Light branch will be embodied in my final report. The interim report was submitted in order that you might be apprised at the earliest possible date of the conclusions I had reached upon a few of the most important questions involved.

Respectfully submitted,

(Signed) JOHN MACKAY.

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## APPENDIX A

### Summary of Valuation of Toronto Electric Light Company's Interests.

1. Proposed purchase price .....		\$8,000,000
2. Total physical property within the City limits, exclusive of land and buildings, as valued by Messrs. R. A. Ross & Company .....	\$5,284,744	
3. Land and Buildings, as valued by Mr. Forman, Assessment Commissioner .....	793,137	
4. TOTAL .....	\$6,077,881	
5. Deduct unpaid part of purchase price on Adelaide Street Building .....	33,000	
6. Nett value of physical assets .....		6,044,881
7. Balance representing cost of franchise .....		<u>\$1,953,119</u>

# APPENDIX A (Continued)

## Summary of Valuation of Toronto Electric Light Company's Plant, by R. A. Ross & Company

Description	Replacement Value	Present Value
1. Equipment of generating and sub-stations .....	\$1,382,596	\$1,063,177
2. Overhead distribution system .....	802,489	633,702
3. Underground distribution system .....	1,706,630	1,513,434
4. Meters and equipment .....	474,406	313,636
5. Machine, Blacksmith and Carpenter shops .....	29,515	20,660
6. Transportation equipment .....	62,454	41,484
7. Office furniture and equipment .....	10,193	7,200
8. Total, as per inventory .....	<u>\$4,468,283</u>	<u>\$3,593,293</u>
9. Engineering, contingencies, interest during construction, business expenses—15% .....	670,242	538,994
10. Work in progress; amount completed at June 30th, 1913 ..	417,334	417,334
11. Engineering on same—5 .....	20,866	20,866
12. Store and supplies on hand, as per Toronto Electric Light Company's statement for June 30th, 1913.....	391,591	391,591
13. Total, not including commitments .....	<u>\$5,968,316</u>	<u>\$4,962,078</u>
14. Commitments on account of new work, as at June 30th, 1913 ..	322,666	322,666
15. Total of property within the City limits, without lands and buildings.....	<u>\$6,290,982</u>	<u>\$5,284,744</u>
16. Property outside the City limits, as inventoried .....	\$ 59,024	\$ 47,690
17. Engineering, contingencies, interest, business expenses—15% ..	8,854	7,183
18. Total for property outside the City.....	<u>\$ 67,878</u>	<u>\$ 54,873</u>
19. Total for all property inside and outside the City limits, except lands and buildings.....	<u>\$6,358,860</u>	<u>\$5,339,617</u>

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Present  
Value

063,177  
633,702  
513,434  
813,636  
20,660  
41,484  
7,200

93,293

38,994  
17,334  
20,866

91,591

62,078  
22,666

84,744

47,690  
7,183  
4,873

9,617

## APPENDIX B

### Summary of Valuation of Toronto Railway Interests

1. Proposed purchase price .....		\$22,000,000
2. Physical property of Toronto Railway, as valued by Messrs. Arnold & Moyes, including real estate and buildings, as valued by Assessment Commissioner .....	\$9,894,483	
3. Physical property of Toronto and York Radial Company, as valued by Messrs. Arnold & Moyes .....	<del>91,564</del>	
4. Total value of Physical property .....		<del>9,986,047</del>
5. Balance, representing cost of franchise .....		<del>\$12,013,953</del>

11,012,000

## APPENDIX C

Toronto General Trusts Building,  
85 Bay Street,  
4th November, 1913.

Professor M. A. Mackenzie,  
Statistician: University of Toronto,  
Toronto.

Dear Mr. Mackenzie,

Confirming my verbal instructions of this date to you, I beg to hand you herewith a copy of the exhaustive population study of the Dominion and the United States of America which you made for me a few years ago. I shall be glad if you will kindly have it brought up to date, and if you will furnish me in connection therewith with a further study of the growth of the population of the City of Toronto from the time of Confederation, accompanied by an estimate of the probable future growth of the City up till and including the year 1921. In connection with the City study, I am particularly anxious that it should be based upon sound data. I wish, however, as a starting point to get your own independent judgment upon the matter.

Yours faithfully,

(Signed) JOHN MACKAY.

APPENDIX C (Continued)

Professor M. A. Mackenzie, M.A.,  
Fellow of the British Institute of Actuaries.

The University of Toronto,  
Toronto,  
10th November, 1913.

Dear Mr. Mackay,

I am sending you herewith tables of the population of the City of Toronto, as estimated by the assessors, by the police and by the Dominion Census Department, at various intervals from 1834 to 1912.

I have estimated the population of Canada up to 1921 assuming that the present annual rate of increase, which was also that of the U.S.A. at the same stage of growth, will continue uniform.

Before making an estimate of the future growth of Toronto I considered the following points in comparison with U.S.A. cities when *they* were approaching the half million mark:—

Toronto is now growing at the rate of nearly  $9\frac{1}{2}\%$  per annum, and its rate of growth has been increasing.

The average rate of growth of U.S.A. cities nearing the half million was about 5 and was decreasing, in spite of the increases shewn at this stage by Chicago and Detroit.

The general tendency of all U.S.A. cities has been to shew a fall in the rate of increase as the population grows.

Canada as a whole shews a rate of growth exceeding that of the United States during the years when the U.S.A. cities were approaching 500,000, with the exception of New York and Chicago.

I conclude that Toronto will shew a future rate of growth above 5 and below  $9\frac{1}{2}\%$ , probably nearer the upper than the lower of these limits, and that is about as far as a statistician can go. This leaves a pretty wide margin for judgment. I have estimated the future population for six equidistant rates from  $5\frac{3}{4}\%$  to  $9\frac{1}{2}\%$ , taking the average of the assessors and police returns for 1912 as a starting point.

In my judgment 800,000 is a fair estimate of Toronto's population in 1921.

Faithfully yours,

(Signed) M. A. MACKENZIE.

# APPENDIX C (Continued)

## City of Toronto: Population Returns

ASSESSORS' RETURNS				POLICE RETURNS				DOMINION CENSUS			
Year	Population	Annual Rate of Increase		Year	Population	Annual Rate of Increase		Year	Population	Annual Rate of Increase	
1834	9,250	.....		1893	188,330	.....		1871	59,000	.....	
1844	18,420	7.15 %		1897	195,990	1.00 %		1881	96,200	5.00 %	
1854	38,480	7.65 "		1901	221,580	3.10 "		1891	181,200	6.55 "	
1864	45,160	1.60 "		1905	262,750	4.35 "		1901	208,000	1.40 "	
1874	68,000	4.20 "		1908	301,930	4.75 "		1911	376,500	6.10 "	
1884	105,210	4.45 "		1912	425,410	8.91 "					
1894	167,650	4.75 "									
1904	226,050	3.05 "									
1905	238,640	5.55 "									
1906	253,720	6.30 "									
1907	272,600	7.45 "									
1908	287,200	5.35 "									
1909	325,300	13.25 "									
1910	341,990	5.15 "									
1911	374,670	9.55 "									
1912	410,040	9.45 "									



# APPENDIX C (Continued)

## Estimates of Population of Toronto for following Years Based upon the following Rates of Increase

Year	ANNUAL RATES						Year
	5½%	6½%	7½%	8%	8½%	9½%	
1912	417,500	417,500	417,500	417,500	417,500	417,500	1912
1913	441,500	444,600	447,800	450,900	454,000	457,200	1913
1914	466,900	473,500	480,200	487,000	493,800	500,600	1914
1915	493,700	504,300	515,000	525,900	537,000	548,100	1915
1916	522,100	537,100	552,400	568,000	583,900	600,200	1916
1917	552,200	572,000	597,400	613,400	635,000	657,200	1917
1918	583,900	609,200	635,400	662,500	690,600	719,700	1918
1919	617,500	648,800	681,500	715,500	751,000	788,100	1919
1920	653,000	691,000	730,300	772,800	816,800	862,900	1920
1921	690,500	735,900	783,600	834,600	888,200	944,900	1921

## APPENDIX D

Toronto General Trusts Building,  
85 Bay Street,  
18th October, 1913

George Bell, Esq., K.C.,  
Toronto.

Dear Sir,

I shall be glad if you will kindly let me know whether you hold at present or whether you have held in the past, any retainer from either the Toronto Electric Light Company Limited, or the City of Toronto, in regard to any matter in respect of which the claims of these corporations came into conflict; and whether you are or have been interested in any other way in any question at issue between these Corporations.

I shall esteem it if you will kindly give me a reply to this inquiry, per bearer.

Yours faithfully,

(Signed) JOHN MACKAY.

APPENDIX D (Continued)

Building,  
October, 1913.

Bank of British North America Chambers,  
4 Wellington Street East,  
18th October, 1913.

John MacKay, Esq.,  
Toronto.

Dear Sir,

or whether  
ht Company,  
the claims of  
rested in any

I beg to say in answer to your inquiry that I do not hold at present and have not held in the past any retainer from the Corporation of the City of Toronto or from the Toronto Electric Light Company, Limited, in regard to any matter in respect of which the claims of these Corporations came into conflict, and that I am not and have not been interested in any way in any question at issue between these Corporations except that I am a rate-payer in the City of Toronto.

er.

Yours faithfully,

CKAY.

(Signed) GEORGE BELL.

APPENDIX D (Continued)

Toronto General Trusts Building,  
85 Bay Street,  
18th October, 1913.

George Bell, Esq., K.C.,  
Toronto.

Dear Sir,

I am duly in receipt of your favor of date, advising me that you have not been interested, at any time, in any matters in dispute between the Toronto Electric Light Company and the City of Toronto. For this I thank you.

I am, therefore, submitting to you, under separate letter, certain questions arising out of an agreement between these Corporations, in regard to which I wish a fair and impartial opinion, having regard solely to the rights of the parties as they appear under the governing instruments.

Yours faithfully,

(Signed) JOHN MACKAY.

APPENDIX D (Continued)

Toronto General Trusts Building,  
85 Bay Street,  
18th October, 1913.

George Bell, Esq., K.C.,  
Toronto.

Dear Sir,

I have been retained by the Corporation of the City of Toronto, to report upon the advisability of a purchase by the City, of the Toronto Electric Light Company, Limited, and the Toronto Railway Company.

I find it necessary, in this connection, to carefully consider, among other things, the terms of the agreement between the Toronto Electric Light Company, Limited, and the Corporation of the City of Toronto, entered into in November, 1889. I enclose herewith a copy of the said agreement as furnished me by the Toronto Electric Light Company, Limited.

You will observe from a perusal of the agreement, that the City of Toronto has the right, in November, 1919, and at stated times thereafter, to acquire the undertaking carried on by the Toronto Electric Light Company, upon the terms therein provided for.

To appraise aright the advantage to the City in purchasing the said undertaking in the immediate future by private bargain, as compared with the advantage of a purchase thereof under the terms of the agreement, in 1919, it is necessary to ascertain the true rights and obligations of the respective parties, with reference to the following matters, namely:—

1. Is the City bound, if it elects to exercise its right of purchase in November, 1919, to compensate the Toronto Electric Light Company, at that time, for its franchise and goodwill, in addition to the compensation to be paid for physical and other tangible assets?
2. If so, what is the term of the then unexpired part of the franchise, for which the Company will be entitled to compensation?
3. Have the parties any right of judicial appeal against the award of such arbitrators as may be appointed in 1919 under the terms of the agreement, to determine the then value of the property, and if so can it be taken to the Privy Council?

I shall be glad if you will kindly advise me, at your earliest convenience, of your opinion on the points mentioned.

Yours faithfully,

(Signed) JOHN MACKAY.

APPENDIX D (Continued)

Bank of British North America Chambers,  
4 Wellington Street East,  
12th November, 1913.

John MacKay, Esq.,  
Toronto.

Dear Sir,

I have carefully read the agreement made between the Corporation of the City of Toronto and the Toronto Electric Light Company, Limited, dated 13th November, 1889, submitted by you.

This agreement recites that the Toronto Electric Light Company, Limited, had been and were engaged in the business of producing and supplying electric light in the City of Toronto on the overhead system and had plant poles and material in use therefor under which light was then being supplied to the City and to individual citizens, and further that the Company proposed to extend their works in the City of Toronto for the further manufacture, production and supply of electricity for the purposes of light, heat, power and other purposes, and had applied to the City for the right to lay down underground wires, conduits and appliances for the further distribution and supply of electricity throughout the City, and that the City had agreed to grant such right upon the terms and conditions hereinafter set forth, and after so reciting such agreement, witnessed that the city gave and granted unto the Company, their successors and assigns the right (in addition to their other works and place in operation for the use of the City and individuals as aforesaid) to construct, lay down, and operate underground wires, conduits and appliances for the distribution and supply of electricity as aforesaid, and to take up, renew, alter and repair the same upon the terms and conditions set forth in such agreement which agreement contains the following provision:

"At the expiration of thirty years from the date of this agreement, the Corporation shall (subject to the provisions hereinafter set forth, and if the Corporation shall have given to the Company one year's previous notice in writing of their intention to do so) have the right to purchase (i.e., at the expiration of the said thirty years) all the interest and assets of the Company, comprising plant, buildings and material used or necessary for the carrying on of its business, and the amount in such case to be paid to the Company by the Corporation, if not agreed upon by the Company and the Corporation, shall be ascertained by the award of three arbitrators to be appointed, one by the Corporation, one by the Company, and the third to be appointed by the two appointed as aforesaid; and in case the Corporation shall fail to exercise such right at the expiration of the said thirty years, the Corporation may, at the expiration of each succeeding period of twenty years, exercise the same right of purchase on the same terms, provided one year's previous notice in writing of their intention so to do shall have been given to the Company."

#### APPENDIX D (Continued)

After careful consideration of the whole agreement my opinion in reference to the questions submitted by you is as follows :—

1. That if the City avails itself of the right to purchase under such agreement the exercise of that right would not extinguish the franchise granted by such agreement, but that such franchise would be included in the subject of the purchase. That the subject of the purchase would be the whole undertaking as a going business including all the rights and franchises as well as all the physical or tangible assets. And that in the absence of agreement as to the amount to be paid, the arbitrators in ascertaining such amount would be entitled, and it would be their duty, to take into consideration the whole subject of the purchase, and every element contributing to the pecuniary value of same, including all rights and franchises, as well as all the physical or tangible assets. I regard the word "comprising" used in the said provision as having been used in the sense of "including," and not as defining or limiting the foregoing general words of description.
2. That the franchise granted by such agreement was a perpetual franchise subject to purchase by the City at the expiration of thirty years from the date of the agreement or at the expiration of each succeeding period of twenty years, but that the franchise so granted was not an exclusive franchise and created no monopoly.
3. That in the event of either of the parties being dissatisfied with the award of the arbitrators an application might be made to the Court to set aside the award, and that an appeal would lie from the order made on such application which could eventually be carried to the Privy Council.

Yours faithfully,

(Signed) GEORGE BELL.

## APPENDIX E

Toronto General Trusts Building,  
85 Bay Street,  
13th October, 1913

W. M. Douglas, Esq., K.C.,  
Home Life Building,  
Toronto.

Dear Sir,

I shall be glad if you will kindly let me know whether you hold at present or whether you have held in the past, any retainer from either the Toronto Electric Light Company, Limited, or the City of Toronto, in regard to any matter in respect of which the claims of these corporations came into conflict, and whether you are or have been interested in any other way in any question at issue between these corporations.

I shall esteem it if you will kindly give me a reply to this inquiry, per bearer.

Yours faithfully,

(Signed) JOHN MACKAY.



APPENDIX E (Continued)

Toronto, 14th October, 1913.

John Mackay, Esq.,  
Toronto General Trusts Building,  
Toronto.

Dear Sir,

In reply to your letter of the 13th instant, I beg to say that I have not held in the past any retainer either from the Toronto Electric Light Company or the City of Toronto in regard to any matters in respect of which the claims of these Corporations came into conflict, and I have not been, nor am I now interested in any way in any questions at issue between these Corporations.

Faithfully yours,

(Signed) W. M. DOUGLAS.

APPENDIX E (Continued)

Toronto General Trusts Building,  
85 Bay Street,  
14th October, 1913.

W. M. Douglas, Esq., K.C.,  
Home Life Building,  
Toronto.

Dear Sir,

I am duly in receipt of your favor of date, advising me that you have not been interested, at any time, in any matters in dispute between the Toronto Electric Light Company and the City of Toronto. For this I thank you.

I am, therefore, submitting to you, under separate letter, certain questions arising out of an agreement between these Corporations, in regard to which I wish a fair and impartial opinion, having regard solely to the rights of the parties as they appear under the governing instruments.

Yours faithfully,

(Signed) JOHN MACKAY.

APPENDIX E (Continued)

Toronto General Trusts Building,  
85 Bay Street,  
14th October, 1913.

W. M. Douglas, Esq., K.C.,  
Home Life Building,  
Toronto.

Dear Sir,

I have been retained by the Corporation of the City of Toronto, to report upon the advisability of a purchase by the City, of the Toronto Electric Light Company, Limited, and the Toronto Railway Company.

I find it necessary, in this connection, to carefully consider, among other things, the terms of the agreement between the Toronto Electric Light Company, Limited, and the Corporation of the City of Toronto, entered into in November, 1889. I enclose herewith a copy of the said agreement as furnished me by the Toronto Electric Light Company, Limited.

You will observe from a perusal of the agreement, that the City of Toronto has the right in November, 1919, and at stated times thereafter, to acquire the undertaking carried on by the Toronto Electric Light Company, upon the terms therein provided for.

To appraise aright the advantage to the City in purchasing the said undertaking in the immediate future by private bargain, as compared with the advantage of a purchase thereof under the terms of the agreement, in 1919, it is necessary to ascertain the true rights and obligations of the respective parties, with reference to the following matters, namely:—

1. Is the City bound, if it elects to exercise its right of purchase in November, 1919, to compensate the Toronto Electric Light Company, at that time, for its franchise and goodwill, in addition to the compensation to be paid for physical and other tangible assets?
2. If so, what is the term of the then unexpired part of the franchise, for which the Company will be entitled to compensation?
3. Have the parties any right of judicial appeal against the award of such arbitrators as may be appointed in 1919 under the terms of the agreement, to determine the then value of the property, and if so, can it be taken to the Privy Council?

I shall be glad if you will kindly advise me, at your earliest convenience, of your opinion on the points mentioned.

Yours faithfully,

(Signed) JOHN MACKAY.



**APPENDIX E (Continued)**

**Re  
CORPORATION OF THE CITY OF TORONTO  
AND  
TORONTO ELECTRIC LIGHT COMPANY**

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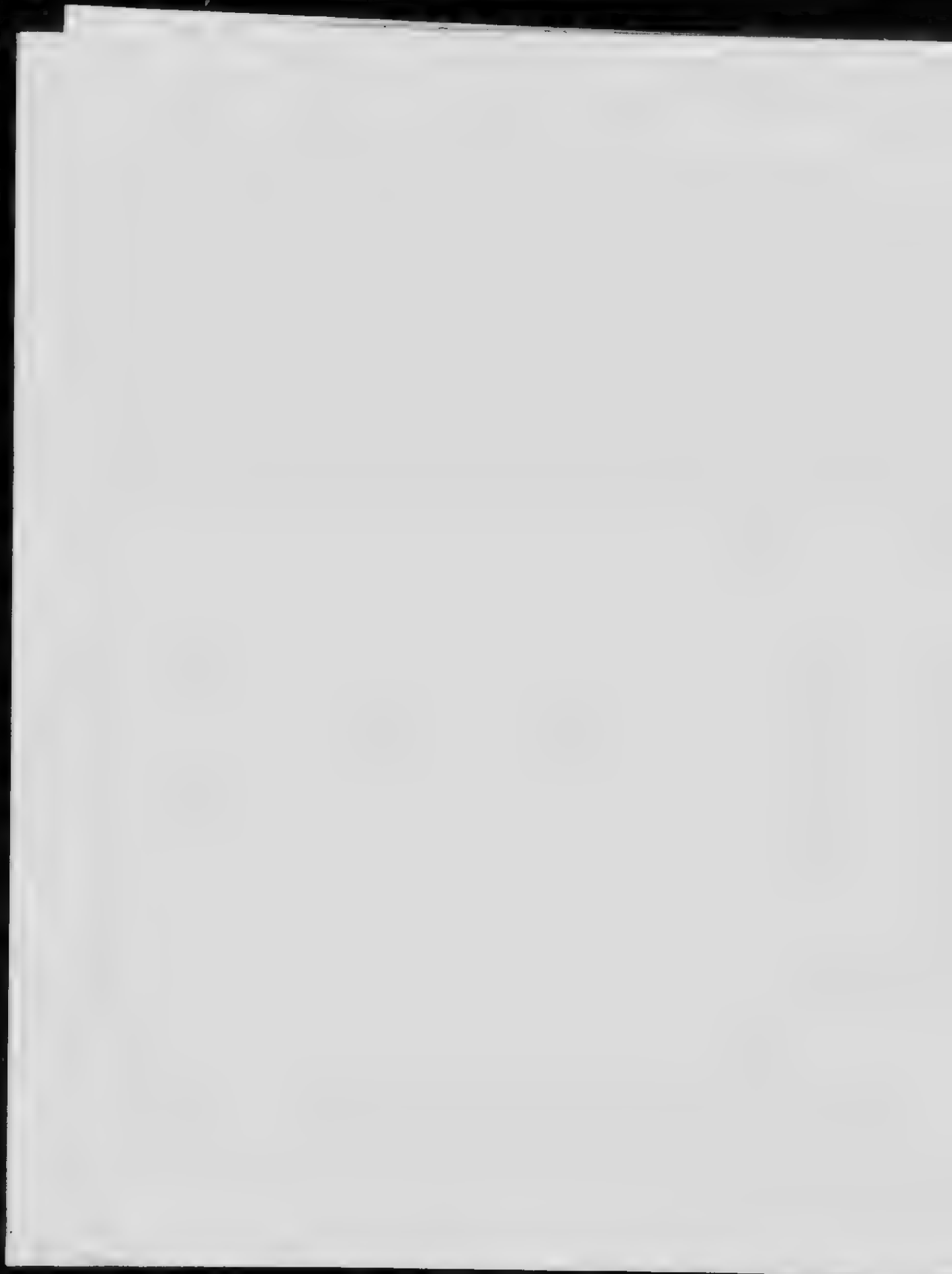
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**OPINION**

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**William Murray Douglas, K.C.  
Toronto**



APPENDIX E (Continued)

RE CORPORATION OF THE CITY OF TORONTO  
AND  
TORONTO ELECTRIC LIGHT COMPANY

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My opinion has been asked on the question of the construction and effect of the Agreement entered into between The Corporation of the City of Toronto and The Toronto Electric Light Company, which Agreement is dated the 13th November, 1889.

The said Agreement was entered into for the avowed purpose of conferring upon The Electric Light Company the right to lay down an underground system. The Agreement recites that the Company were then, that is, at the time of the Agreement, engaged in the business of producing and supplying electric light in the City of Toronto on the overhead system, and at that time had plant, poles and material in use therefor by which light was then being supplied to the City and to individual citizens thereof.

Under the Agreement in question the City Corporation granted to the Electric Light Company, their successors and assigns, in addition to the right they then had, the right to construct, lay down and operate underground wires, conduits and appliances for the distribution and supply of electricity, and to take up, renew, alter and repair the same, and for that purpose from time to time under the supervision and direction of the City Engineer, and to his satisfaction to make such openings in, upon and along street, lanes, parks and public places in the City of Toronto as may be necessary or convenient for the purposes aforesaid.

The Agreement makes further provision in respect of the openings and in respect of damages sustained by the Corporation, which provisions do not affect the matter now in question. There is no time fixed during which the Electric Light Company should have the privilege of exercising its rights either in respect of the overhead system or of the underground system, or of both combined, but a right to purchase is vested in the Corporation, which is contained in Clause 6 of the Agreement, as follows:

"At the expiration of thirty years from the date of this Agreement, the Corporation shall, subject to the provisions hereinafter set forth, and if the Corporation shall have given to the Company one year's previous notice in writing of their intention so to do, have the right to purchase (i.e., at the expiration of the said thirty years) all the interest and assets of the Company, comprising plant, buildings and material used

## APPENDIX E (Continued)

or necessary for the carrying on of its business, and the amount in such case to be paid to the Company by the Corporation, if not agreed upon by the Company and the Corporation, shall be ascertained by the award of three arbitrators to be appointed, one by the Corporation, one by the Company and the third to be appointed by the two appointed as aforesaid; and in case the Corporation shall fail to exercise such right at the expiration of the said thirty years, the Corporation may, at the expiration of each succeeding period of twenty years, exercise the same right of purchase on the same terms, provided one year's previous notice in writing of their intention so to do shall have been given to the Company. Provided always that such right of purchase shall exist only in case the Corporation shall provide for a similar right of purchase and shall impose a like condition upon all Companies hereafter authorized or required by the Corporation to use any of the streets, lanes, parks or public places in the City of Toronto, for the purpose of carrying on the business of electric lighting, heating or power within the City."

The question arises as to what was intended to be purchased by the City under said Clause, and what was to be paid for it.

Was it the intention of the parties that the entire business and undertaking of the Electric Light Company should be purchased by the City, or simply that the City was to purchase the physical assets consisting of plant, buildings and material used or necessary for the carrying on of the business? I have arrived at the conclusion that on the true construction of the Clause in question, taken in conjunction with the entire Agreement, it was the intention of the parties that the City should purchase from the Electric Light Company its entire business and undertaking as a going concern. The words used are—"all the interest and assets of the Company, comprising, plant, buildings," etc. In my opinion the word "comprising" is not a word of definition or restriction. I do not think it was used as defining what was meant by "all the interest and assets" but that it was meant to be used in the sense of "including". It will be observed that the words "interest and assets" are wide, but significance must also be attached to the fact that the parties have said that it was "all" the interest and assets that were to be purchased.

As above intimated therefore I am of the opinion that what was to be purchased by the City Corporation and sold by the Electric Light Company was not merely the physical structures of the Company, but the entire business and undertaking of the Company as a going, toll-earning concern, that is, the overhead and underground system, which should be then in use, with the rights, powers and authorities of the Company to maintain it in the public streets, to supply the Corporation and individuals with electricity, and to take the prescribed tolls for so doing, and to exercise the other powers which it had the right to exercise under the Agreement and under its Charter.

I am further of the opinion that the City Corporation in case it should elect to purchase in 1919, or at any subsequent twenty year period, would be bound to pay for the entire business and undertaking as a going concern, such as I have described, on the basis of the



## APPENDIX E (Continued)

value of a concern without limitation of time as to its franchise, and not on the basis of the value of a concern whose franchise had been definitely limited to a specified period.

The mode of valuing the undertaking to be purchased would be a question to be determined by the arbitrators. They should, and no doubt would, in my opinion, in arriving at the total purchase price to be paid, ascertain the value of the net toll earning capacity of the undertaking after making all proper deductions and add thereto the proper value of the physical assets.

As to the right of the parties to dispute the findings of the arbitrators I may say that I have no doubt they would have this right and they could contest the valuation of the arbitrators in the Courts, both in respect of the principle of such valuation and in respect of the quantum. Similar cases have frequently gone to the Privy Council, and to my mind there is no doubt that if this matter went to arbitration neither party would be satisfied with any decision except that of the Privy Council.

(Signed) WILLIAM DOUGLAS.

## APPENDIX F

Toronto General Trusts Building,  
85 Bay Street,  
14th November, 1911

Messrs. R. A. Ross & Company,  
80 St. Francois Xavier Street,  
Montreal, P.Q.

### RE T. E. L. VALUATION.

Gentlemen,

I thank you for your favor of the 13th instant just to hand in the above matter.

Mr. Ross, however, has during the course of two or three conversations which I have had with him on the subject, informed me that the general condition and standard to which the whole physical plant of the Toronto Electric Light Company has been brought by the changes effected since his last valuation in 1911, constitute a very great improvement upon the condition and standard of that year; and that the plant viewed as a whole to-day, while not completely modern in every respect, has been greatly modernised in the interval, and is in good all-round condition.

If I have correctly gathered and stated the views of your Mr. Ross in this matter, I shall be glad if you will kindly confirm the foregoing.

Yours faithfully,

(Signed) JOHN MACKAY.

APPENDIX F (Continued)

Montreal, 15th November, 1913.

John MacKay, Esq.,  
85 Bay Street,  
Toronto, Ont.

RE T. E. L. VALUATION

Dear Sir,

Referring to yours of November 14th, with regard to the general condition of the plant and equipment of the Toronto Electric Light Company in 1913, as compared with its condition in 1911, we would say that this plant, taken as a whole, has improved very considerably in physical condition, and, no doubt, also in operating results.

Specifically, the following improvements are apparent:

- (1) The large increase of underground service and decrease of overhead;
- (2) The partial elimination of the 60 cycle distribution system; the intention being to entirely discard this system eventually;
- (3) The practical and eventual entire elimination of the 220 440 volt D.C. service;
- (4) The improvement of the standby equipment, by the addition of steam turbines and boilers and storage batteries;
- (5) The entire elimination of the old arc light machinery and street equipment;
- (6) The replacement of old switchboards by new;
- (7) The increase in the direct current 115 230 v. system is considered by the Company an improvement, which it undoubtedly is to that system, but our own ideas are that this system should never be extended, but, on the other hand, restricted.

Considered as a whole, therefore, and with the system as it is, the equipment is modern and entirely suitable for the uses to which it is put by the Company.

Trusting this answers your question satisfactorily,

Yours very truly,

(Signed) R. A. ROSS.

## APPENDIX G

Toronto General Trusts Building,  
85 Bay Street,  
23rd October, 1913.

Bion J. Arnold, Esq.,  
105 South La Salle Street,  
Chicago, Ill.

Dear Sir,

I have been retained by the Corporation of the City of Toronto to advise it on the financial aspects and the general policy of the proposed purchase by the City of the Toronto Electric Light Company and the Toronto Railway Company, and I am authorized in connection therewith by the said Corporation to consult you with reference to railway matters.

The Mayor has handed me the joint report of yourself and Mr. J. W. Moyes, dated 20th ulto., upon the physical and franchise valuations of the Street Railway Systems, to the substance of which I have given careful attention. There are, however, certain questions to consider which go beyond the scope of the said report, in connection with which I desire your best judgment. Before submitting the definite questions I draw your attention formally to the following underlying conditions with which you are quite familiar, namely:—

- (a) The valuations you have made of the earning power of the Toronto Railway Company and of those parts of the Radial Systems which operate within the present City limits are based upon competitive conditions which will not be brought into play if the City should complete the contemplated purchase.
- (b) The Toronto Railway Company operates substantially its whole system within the municipal limits of the City as they stood in 1891. The City's boundaries have been greatly extended since that date, and the only transportation facilities enjoyed in the additional territory are those furnished by the existing Civic Street Car System and the Toronto and York Radial Company and the Toronto Suburban Railway Company. The facilities so furnished are, however, entirely inadequate to the needs of the districts, and of course they are entirely unconnected with the services supplied by the Toronto Railway Company.
- (c) If the City of Toronto should complete the proposed purchase, it will acquire and assume a complete monopoly of surface traction in this City, and the System will undoubtedly be enlarged and conducted by it free of the competition of the underground tube system, which you considered and allowed for in the valuations above mentioned.

## APPENDIX G (Continued)

With these underlying conditions in mind as a key, I would like you to furnish me with estimates of the following, namely:—

- (1) The capital cost of all traction additions necessary to furnish adequate facilities throughout the whole limits of the present City of Toronto on a progressive scale adapted to the increasing requirements of the City up till September, 1921, the date at which the franchise of the Toronto Railway Company expires, including therein the cost of reconstructing the lines of the Radial Systems within the present City limits in accordance with the terms of the tentative agreement entered into by the City and Sir William Mackenzie, and also including therein the cost of linking up the existing Toronto Railway System and its necessary extensions with the City sections of the said Radial Systems and the existing Civic Street Car System. That is to say, I want an estimate of the capital expenditure involved in a complete unification of the existing systems and the necessary extensions thereof throughout the limits of the City in order to provide reasonably adequate transportation facilities up till 1921 for the increasing population of the City.
- (2) The gross and net traffic receipts which should be realised yearly from date until 1921 under the said consolidated system brought under a single ownership. In estimating the latter, you may assume thoroughly competent and efficient executive management, and you may assume that the extra capital that will require to be provided for the necessary extensions will cost the City an average rate of 5% per annum.
- (3) The capital cost of providing the necessary additional traction facilities required to accommodate the population located within the territory which has been added to the City since 1891, allowing for this again on a progressive scale adapted to the increasing needs of the districts up till September, 1921. This latter, on the assumption that the existing system of the Toronto Railway Company will not be purchased by the City; and that the additional facilities for these districts which may be called the "outer zone" shall in conjunction with the existing Civic Street Car System be operated by the City as a single independent system.
- (4) The gross and net traffic receipts which should be realised yearly between date and 1921 from this consolidated independent Civic Street Car System operating in the outer zone. You may assume in this case the same rate of interest as is mentioned above, and you will get certain valuable material for forming a judgment on the questions of local traffic and capital and operating costs from a report made by Mr. R. C. Harris, Commissioner of Works, to the Mayor on the 11th instant, upon the existing Civic System. I submit herewith a copy of the Mayor's message to Council, dated 13th instant, which includes the report in question.

There is another important underlying condition which affects the volume of traffic receipts to which I should draw attention. You, of course, would perceive and bear the point in mind quite independent of any advice from me. It is this. The consolidation under

## APPENDIX G (Continued)

municipal control of the Street Car Systems throughout the whole limits of the City will mean the collection of one fare from each passenger from any point to any point within the City, subject to the usual transfer privileges, instead of as at present one fare per passenger on the Toronto Railway System, plus another fare from the same passenger upon transferring to the existing Civic Street Car System or to the City sections of the Radial Systems, and vice versa. This means that the gross traffic receipts that will be realised under a consolidation of the Systems will be raised above the progressive levels of the Toronto Railway Company only by such additional local traffic as originates and terminates in the outer zone, and by such travel stimulus as may be caused by greatly improved means of transportation.

I understand that the average fare per passenger realised by the Toronto Railway Company is slightly under 4 cents, while the average fare per passenger realised by the existing Civic System is, according to Mr. Harris' report above referred to, 1.71 cents. Therefore while such additional local traffic will yield approximately 4 cents per passenger to the consolidated system, it will yield on the present scale of fares, less than half that average to the enlarged Civic System of the outer zone if consolidation should not be effected.

In connection with the foregoing I may also say that I have ascertained from the accounts of the Toronto Railway Company that the managing, operating and maintenance charges for the years 1911 and 1912, including pavement charges and taxes other than the percentage of gross receipts payable to the City, and including further an allowance for replacement charges based on the cost thereof over a period of ten years, amount to slightly less than 56% of the gross earnings for the said two years. And the operating expenses of the said years 1911 and 1912 were higher than they had been since the year 1905. If therefore you feel that the said allowance of 56% for the said charges including depreciation is safe and reasonable, you are free to adopt it, while if you think it ought to be increased, you are free to increase it.

You submitted a report upon the traction conditions and requirements of this City to Mr. Geary, K.C., Corporation Counsel, in October, 1912. In estimating the cost of the additional traction facilities above mentioned you will adhere to the general requirements indicated by that report, unless some specific modification thereof has been agreed upon in the meantime between the City and yourself.

You will also, of course, introduce such elasticity into your estimates as will allow for the construction of the additional traction facilities over any streets or routes that may be adopted by the City Council from time to time in preference to those specific streets or routes illustrated and recommended in your report of last year. That is to say, that you will estimate the cost of additional trackage and equipment of capacity sufficient for the needs of the whole City for the period stated, with such a margin of safety as will permit of variations from any set scheme of routes without increasing the total cost, always provided of course that ordinarily sound judgment is displayed in the selection of alternative routes. I would also like on completion thereof, a map illustrating the consolidated system.

## APPENDIX G (Continued)

This letter confirms in a formal way the requests which I have submitted to you this day in person, having come to Chicago at the request and with the authority of the Corporation of the City of Toronto for this express purpose. You will render your account against the City of Toronto for the services and expenses involved in dealing with these matters.

I also take this opportunity of thanking you for placing so promptly at my disposal the services of your staff for the purpose of preparing the foregoing estimates under my own personal supervision.

Yours faithfully,

(Signed) JOHN MACKAY.

APPENDIX G (Continued)

Bion J. Arnold,  
Consulting Electrical Engineer,  
105 South La Salle Street,  
Chicago.

November 1st, 1913.

John Mackay, Esq.,  
Care of John Mackay & Company,  
Toronto General Trusts Building,  
85 Bay Street,  
Toronto, Canada.

Dear Sir,

In accordance with your letter of October 23, requesting that I prepare certain figures with regard to the consolidation of Greater Toronto Street Railway Systems, I beg to submit to you herewith MEMORANDA REGARDING THE CONSOLIDATION OF THE GREATER TORONTO STREET RAILWAY SYSTEMS, in which I have endeavored to prepare for you in the form of tables accompanied by description thereof, the figures with regard to this consolidation which you have requested.

These memoranda cover your inquiries as I understand them, but if you desire additional figures or estimates in connection with the work which you are now undertaking on behalf of the City of Toronto, I would be glad to promptly supply any additional information on request from you.

Yours very truly,

(Signed) BION J. ARNOLD.



**APPENDIX G (Continued)**

1913.

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**MEMORANDA**  
**REGARDING CONSOLIDATION OF**  
**GREATER TORONTO STREET RAILWAY SYSTEMS**

**BION J. ARNOLD**  
**CONSULTING ELECTRICAL ENGINEER**  
**106 SOUTH LA SALLE STREET**  
**CHICAGO**



APPENDIX G (Continued)

MEMORANDA REGARDING CONSOLIDATION OF  
GREATER TORONTO STREET RAILWAY SYSTEMS

---

The basis of the new capital additions that will be required to extend the street railway system throughout greater Toronto, if the Toronto Railway System and allied systems are purchased from the present owners by the City of Toronto, is as follows:—

- 1st.—That the trackage and passenger carrying facilities shall be provided until 1921 for greater Toronto on a scale adapted to the increasing population and traveling requirements of the public for that period;
- 2nd.—That the tracks shown in Figure 5 in B. J. Arnold's report for 1912 shall be provided; including not only the lines within the present city limits, but some extensions outside of the present city limits, which will represent lines in territory that presumably will be taken into the city limits before the year 1921;
- 3rd.—That the Radial lines operated within the city limits shall be double tracked on special gauge adapted to the cars of the Toronto Railway System, and that additional rails shall be laid down on each track from the points at which they touch the city limits to a common center at the heart of the city, to enable the operation thereon of both standard gauge cars of the Radial systems and special gauge cars of the Toronto Railway System and city street car system.

In estimating the cost of the entire construction, the cost of the track and trolley system, the latter including poles and overhead working conductor, is estimated on a track mile basis, and the additional investment in cars, power plant, cable distributing system, and car houses is made proportionate to the increase in business, the larger capacity of the new cars added being taken into consideration in estimating their number. It is also assumed that the trail cars will be superseded by motor cars as recommended in Mr. Arnold's report.

The estimates prepared, as thus stated, for the year 1914, include the extensions recommended in Mr. Arnold's report for the years 1913 and 1914, by reason of the fact that it is considered impossible to complete the negotiations necessary to undertaking the work by the beginning of the year 1914. The estimates for the years 1915 and 1916 include the track construction recommended in the above mentioned report. The estimates also include the cost of the double tracking of the Radials during the years 1914 and 1915. At the end of the year 1916, when the property has been thus increased, it is found that the property at that time appears to be sufficient to adequately serve the population then estimated, and at that date the average cost of the property, enlarged to meet the requirements of the increased population, per mile of track, has been determined.

## APPENDIX G (Continued)

From the years 1916 to 1921 inclusive, the track mileage has been so increased as to preserve a constant ratio between the miles of track and the population, and the additional expenditure required to so increase the property has been estimated at the average cost per mile of track, as found at the end of the year 1916.

The various quantities involved are set up in the following series of tables:—

Table I.

The table showing the single track mileage for the Consolidated system gives the track miles for the year 1913 and the estimated track miles for the years 1914-1921 inclusive. The track miles as shown in this table are divided as follows:—

- 1st.—The Toronto Railway Company mileage, which is constant for the entire period;
- 2nd.—Extensions within old city limits, which refers to the additional mileage within the old city limits, exclusive of mileage on the Radial lines;
- 3rd.—Radial lines, which include track mileage of the Radial systems as they now exist, together with the increases due to the double tracking of these Radials during the period considered;
- 4th.—Existing Civic lines, which represents the track mileage of the Civic lines as they now exist;
- 5th.—Extensions in outer zone, which represents the mileage to be constructed within the present city limits of Toronto, but outside of the old city limits.

The totals show the increase in single track mileage from 147.3 miles for the Consolidated system in 1913, to a total of 283.2 miles in 1921, or an increase in mileage of the entire system of 92½%. The increase in mileage in the outer zone, that is, Radial lines, Civic lines, and extensions in the outer zone, however, is from a total of 28.3 miles in the year 1913, to 141.7 miles in the year 1921, or a total increase in track facilities in the outer zone of 400% during the entire period.

There is also included in this table a statement of the mileage of track on the Radial lines and on the Toronto Railway Company's lines that will have to be provided with additional rails in order to bring the Radial companies' cars to a common center, which is taken tentatively as in the vicinity of the city hall.

# APPENDIX G (Continued)

## Table I.

### Single Track Mileage—Consolidated System

	1913	1914	1915	1916	1917	1918	1919	1920	1921
Toronto Railway Company .....	119	119	119	119	119	119	119	119	119
Extensions within Old City Limits .....			17	22.5	22.5	22.5	22.5	22.5	22.5
Radial Lines .....	10.9	15.5	21.3	21.3	21.3	21.3	21.3	21.3	21.3
Existing Civic Lines .....	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4
Extensions in Outer Zone .....		10	19	31	44	58	72	87	103
Total Mileage .....	147.3	167.9	193.7	211.2	224.2	238.2	252.2	267.2	283.2
Additional Rail Mileage on Present Radial Lines.		7.8	7.8	7.8	7.8	7.8	7.8	7.8	7.8
Additional Rail Mileage on Toronto Railway Company's Lines .....		4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1

## APPENDIX G (Continued)

**Table II.**

Table II. shows the additional investment required in extending the lines of the entire system throughout the period considered. These values do not include the cost of the present lines of the Toronto City Railway Company nor the present Civic lines.

The estimate includes for the year 1914 the construction of the track mileage recommended in Mr. Arnold's report for 1912 for the two years, 1913 and 1914, together with the cost of cars and power plant which have been added in proportion to the increasing business. An additional investment in this year is represented by the estimated cost of the additional rails required in reconstructing such of the Radial railway lines as are to be rebuilt during this year. In this case, however, deduction has been made for an estimated second-hand value of such of the Radial companies' rails as are replaced during the year, since a portion of the new rail thus laid down will be laid down on tracks which are to be taken up and replaced in their entirety by new rails.

In a similar way the estimates for 1915 and 1916 have been prepared. The estimates for the years 1917 to 1921, inclusive, are based upon determined miles of track to efficiently serve the increased business at an average cost per mile of \$104,354, which average cost per mile for the entire system is determined in Table III.

# APPENDIX G (Continued)

## Table II.

### Additional Investment

1913	Cars, 58 .....	@	\$ 7,500	\$435,000	
	Power Plant for 58 cars .....	@	750	43,500	
Total for 1913					\$ 478,500
1914	*Track, 31.5 miles .....	@	\$20,000	\$ 630,000	
	Additional rail, 4.1 miles .....	@	14,000	57,400	
	Additional rail, 7.8 miles .....	@	9,000	70,200	
	Cars, 202 .....	@	7,500	1,515,000	
	Power Plant for 202 cars .....	@	750	151,500	
	Miscellaneous 10% .....			242,410	
				2,666,510	
	Less 1010 tons of second hand rails .....	@	22	22,220	
Total for 1914					2,644,290
1915	Track, 25.8 miles .....	@	\$20,000	\$ 516,000	
	Cars, 148 .....	@	7,500	1,110,000	
	Power Plant for 148 cars .....	@	750	111,000	
	Miscellaneous 10% .....			173,700	
Total for 1915					1,910,700
1916	Track, 17.5 miles .....	@	\$20,000	\$ 350,000	
	Cars, 129 .....	@	7,500	967,500	
	Power Plant for 129 cars .....	@	750	96,750	
	Car house for 250 cars .....	@	1,600	400,000	
	Miscellaneous 10% .....			181,425	
Total for 1916					1,995,675
1917	13 miles complete line .....	@		\$104,354	1,356,602
1918	14 " " " .....	@		104,354	1,460,956
1919	14 " " " .....	@		104,354	1,460,956
1920	15 " " " .....	@		104,354	1,565,310
1921	16 " " " .....	@		104,354	
				= (\$1,669,664)	
For eight months					1,113,109
Total New Investment					\$13,986,098

\* Includes 10.9 miles of reconstructed radial lines.

## APPENDIX G (Continued)

Table III.

Table III. shows the method of arriving at the average cost of \$104,354 per mile. In this table the first item represents the cost new value of the physical property of the Toronto Railway Company now used in giving service in Toronto, \$13,532,993 in amount. To this item of cost has been added the estimated cost of such extensions during the years 1913, 1914, 1915 and 1916, as will be necessary to provide an adequate transportation system in Toronto. In arriving at this investment credit has been taken for the cost new value of the trail cars that should be superseded. The final value of the net investment as at the end of the year 1916 is \$20,223,734, which represents the value of a street railway system, with a total mileage of 193.8 miles, or an average investment per mile of \$104,354.



# APPENDIX G (Continued)

Table III.

## Estimated Cost per Mile—Consolidated System

The Toronto Railway Company—Cost New...			\$13,532,993
1913	Cars, 58 .....	@ \$ 7,500	\$ 435,000
Extensions	Power Plant for 58 cars .....	@ 750	43,500
			<hr/>
			478,500
1914	Track, 31.5 miles .....	@ \$20,000	\$ 630,000
Extensions	Cars, 202 .....	@ 7,500	1,515,000
	Power Plant for 202 cars .....	@ 750	151,500
	Miscellaneous 10% .....	@	229,650
			<hr/>
			2,526,150
1915	Track, 25.8 miles .....	@ \$20,000	\$ 516,000
Extensions	Cars, 148 .....	@ 7,500	1,110,000
	Power Plant for 148 cars .....	@ 750	111,000
	Miscellaneous 10% .....	@	173,700
			<hr/>
			1,910,700
1916	Track, 17.5 miles .....	@ \$20,000	\$ 350,000
Extensions	Cars, 129 .....	@ 7,500	967,500
	Power Plant for 129 cars .....	@ 750	96,750
	Car house for 250 cars .....	@ 1,600	400,000
	Miscellaneous 10% .....	@	181,425
			<hr/>
			1,995,675
Total .....			<hr/>
			\$20,444,018
Less for Superseded Trailers .....			220,284
			<hr/>
Net Investment .....			\$20,223,734
Total Mileage .....			193.8
Average Investment per mile .....			\$104.354

## APPENDIX G (Continued)

Table IV.

Table IV. contains a statement of the fixed charge on the system as a whole on the assumption that the present property of the Toronto Railway Company, including the Radial lines within the present city limits, are purchased from the present owners by the City at \$22,000,000, and that the combined system shall be increased in accordance with the investment shown in Table II. throughout the period terminating September 1st, 1921.

In arriving at the fixed charge on this investment, the interest has been figured on the immediate investment of \$22,000,000 at  $4\frac{1}{2}$  per annum, while the interest has been figured on the additional capital required at 5 per annum. The interest charged for the complete period has been figured in this way by years with the exception of the year 1913, for which only six months interest has been figured, and the year 1921, for which only eight months interest has been figured.

# APPENDIX G (Continued)

## Table IV.

Fixed Charge on the Consolidated System excluding the existing Civic Lines  
per Table V.

Year	Total Investment	NEW CAPITAL		FIXED CHARGE		
		Annual Increase	Total	Original Investment @ 4½ %	New Capital @ 5%	Total
1913—June 30	\$22,000,000					
1913	22,478,500	\$ 478,500	\$ 478,500	* \$495,000		\$ 495,000
1914	25,122,790	2,644,290	3,122,790	990,000	\$ 23,925	1,013,925
1915	27,033,490	1,910,700	5,033,490	990,000	156,140	1,146,140
1916	29,029,165	1,995,675	7,029,165	990,000	251,674	1,241,674
1917	30,385,767	1,356,602	8,385,767	990,000	351,458	1,341,458
1918	31,846,723	1,460,956	9,846,723	990,000	419,288	1,409,288
1919	33,307,679	1,460,956	11,307,679	990,000	492,336	1,482,336
1920	34,872,989	1,565,310	12,872,989	990,000	565,384	1,555,384
1921—8 months	35,986,098	1,113,109	13,986,098	660,000	429,099	1,089,099
Total		\$13,986,098		\$8,085,000	\$2,689,304	\$10,774,304

\* For six months.

## APPENDIX G (Continued)

Table V.

The fixed charge on the investment in the present Civic lines is shown in Table V. The investment herein contained is substantially that furnished by Mr. Harris in his letter of October 11, to Mayor Hocken. The total investment has been increased from \$1,251,000 in 1913, to \$1,451,000 in the year 1921, by the addition of \$25,000 per year, this being substantially an equal distribution of the \$200,000 estimated in Mr. Harris' letter that will be required for additional equipment on the present Civic lines to handle the increasing business.

The fixed charge has been estimated on the basis of a 5% interest charge.

The value of the fixed charge in Table V. is to be taken into consideration with the fixed charge on the investment as a whole, appearing in Table IV. in order to arrive at the total fixed charge to be borne by the City of Toronto, in case it elects to purchase the property of the Toronto Railway Company, and appears in Table VI.

# APPENDIX G (Continued)

Table V.

## Fixed Charge—Due to Present Civic Lines including Additional Equipment to be Provided

Year	Total Investment	Fixed Charge, 5%
1913—June 30	\$1,251,000	
1913—6 months	1,263,500	\$ 31,275
1914	1,288,500	63,175
1915	1,313,500	64,425
1916	1,338,500	65,675
1917	1,363,500	66,925
1918	1,388,500	68,175
1919	1,413,500	69,425
1920	1,438,500	70,675
1921—8 months	1,451,000	47,950
		<hr/> \$547,700

## APPENDIX G (Continued)

**Table VI.**

Table VI. combines the fixed charges on the Consolidated System as figured in Table IV. with the fixed charges on the Civic lines as shown in Table V. thus arriving at the fixed charge year by year for the entire mileage of the Consolidated system.

# APPENDIX G (Continued)

Table VI.

## Fixed Charge—On Consolidated System

Year	FIXED CHARGE		
	Per Table IV.	Per Table V.	Total.
1913—6 months .....	\$ 495,000	\$ 31,275	\$ 526,275
1914 .....	1,013,925	63,175	1,077,100
1915 .....	1,146,140	64,425	1,210,565
1916 .....	1,241,674	65,675	1,307,349
1917 .....	1,341,458	66,925	1,408,383
1918 .....	1,409,288	68,175	1,477,463
1919 .....	1,482,336	69,425	1,551,761
1920 .....	1,555,384	70,675	1,626,059
1921—8 months .....	1,089,099	47,950	1,137,049
Total .....	<u>\$10,774,304</u>	<u>\$547,700</u>	<u>\$11,322,004</u>

## APPENDIX G (Continued)

Table VII.

Table VII. has been prepared to determine the deduction that should be made from the gross earnings of the entire Consolidated system on account of the local traffic in the outer zone, that is, the traffic originating and terminating in the outer zone. In order to arrive at this estimate, the amount of traffic in the outer zone has been determined on the basis of the traffic on the city lines as estimated by Mr. Harris, from which a total estimated traffic per mile of track per year has been determined for the average of the nine years considered by Mr. Harris. It is then estimated that, since ordinarily 70% of the street car traffic, is rush hour traffic, which is practically all through traffic from the outskirts of the city to the center, that the remaining 30% must furnish practically all of the strictly local traffic, and it is further estimated that this amount would not exceed 50% of this remainder, or 15% of the entire traffic originating on the lines considered. With the volume of the purely local traffic thus determined, the income per mile of \$3,000 was obtained by estimating the receipts from this traffic at 4 cents per ride, instead of the average fare of something less than 2 cents per ride as determined by Mr. Harris. On this basis the gross receipts from such local traffic has been estimated by multiplying the miles of track for each year in the outer zone by an average gross receipt of \$3,000 per mile.

The mileage of the total outer zone includes, first, the mileage of the present civic lines, to which has been added the extensions of the civic lines in the outer zone as a second item, and as a third item, the mileage on the radial lines, that, under unified operation, will be used by city cars for furnishing local city service as well as by radial cars for furnishing interurban service.



# APPENDIX G (Continued)

## Table VII.

### Gross Earning Applicable to Local Traffic in Outer Zone

Year	TRACK MILEAGE				GROSS RECEIPTS Local Traffic	
	Present Civic Lines	Outer Extensions	Radial Lines	Total Outer Zone	Per Mile	Total
1913	17.4		3.9	21.3	\$3,000	\$ 63,900
1914	17.4	10	3.9	31.3	3,000	93,900
1915	17.4	19	7.8	44.2	3,000	132,600
1916	17.4	31	7.8	56.2	3,000	168,600
1917	17.4	44	7.8	69.2	3,000	207,600
1918	17.4	58	7.8	83.2	3,000	249,600
1919	17.4	72	7.8	97.2	3,000	291,600
1920	17.4	87	7.8	112.2	3,000	336,600
1921—8 months	17.4	103	7.8	128.2	3,000	256,400
Total						\$1,800,800

## APPENDIX G (Continued)

Table VIII.

In Table VIII. the net surplus to the city from the operation is obtained on the following basis. The gross earnings from the operation of the Consolidated system are estimated as increasing at the rate of 11 per annum for the period considered, and appear as Column 1. In Column 2 are found the gross earnings applicable to the local traffic in the outer zone as determined in Table VII. These earnings subtracted from the gross earnings of the Consolidated system give the gross earnings applicable to the balance of the system, and appear in Column 3, and these earnings are estimated to be the earnings that the present railway system would receive from the operation of the entire system if the city does not purchase the railway company, but if it does build the extensions in the outer zone, totaling 103 miles as shown in Table I. In this case it is assumed that the traffic will be delivered to the Toronto Railway Company's lines, and the amount then appearing in Column 3 would represent their gross receipts. This column is arrived at for the purpose of estimating in Column 5 the estimated value of the city's share if it does not purchase the Toronto Railway's lines, but if it does build the lines in the outer zone.

The net earnings from the entire property operated as a whole appear in Column 4, which is 44% of the gross earnings appearing in Column 1, it being thus assumed that the entire extended system operated as a unit has an operating ratio of 56%. In arriving at this ratio it is assumed that the city, in making the extensions, will carry in the cost of the railway property, the same items of expense as are now borne by the Toronto Railway Company, and that the city will still carry in its paving account such items of expense as are now carried in the paving account for work done on the Toronto Railway Company's lines. Under these conditions the operating ratio of the property as a whole, when extended, should not vary materially from the operating ratio of the present Toronto Street Railway Company.

Column 6 shows the net surplus that will accrue to the city if it operates the property itself and is obtained by subtracting from the net earnings appearing in Column 4 the amount which the city would receive if it did not operate the property, appearing in Column 5.

The total thus arrived at is the net result from operation due to the strictly city passenger traffic, but does not include any additional amount which might accrue to the city if it grants the Radial Railways the right to use the city lines.

APPENDIX G (Continued)

Table VIII.

Net Surplus to City from Operation of Consolidated Systems

Year	GROSS EARNINGS			4	5	6
	1	2	3			
	Consolidated System	Applicable to Local Traffic in Outer Zone	Applicable to Balance	Net Earnings 44% Col. 1	City's Share Based on Col. 3	Net Surplus Col. 4 Col. 5
1913	\$ 6,047,336	\$ 63,900	\$ 5,983,436	\$1,330,414	\$ 468,344	\$ 862,070
1914	6,712,543	93,900	6,618,643	2,953,519	1,063,729	1,889,790
1915	7,450,923	132,600	7,318,323	3,278,406	1,203,665	2,074,741
1916	8,270,525	168,600	8,101,925	3,639,031	1,360,385	2,278,646
1917	9,180,283	207,600	8,972,683	4,039,325	1,534,536	2,504,789
1918	10,190,114	249,600	9,940,514	4,483,650	1,728,103	2,755,547
1919	11,311,027	291,600	11,019,427	4,976,852	1,943,885	3,032,967
1920	12,555,240	336,600	12,218,640	5,524,306	2,183,728	3,340,578
1921-8 months	9,290,878	256,400	9,034,478	4,087,986	1,546,896	2,541,090
Total	\$81,008,869	\$1,800,800	\$79,208,069	\$34,313,489	\$13,033,271	\$21,280,218

\* For six months.

## APPENDIX G (Continued)

Table IX.

Table IX. contains a statement of the investment in the Radial systems' routes for the years considered and the interest and depreciation thereon figured at 10 , that is, 5 for interest and 5% for depreciation, thus assuming a 20-year life for these rails. Such interest and depreciation should be added to the net surplus from operation of the system, since the capital cost of this investment is included in the total investment to be made for the Consolidated system. If therefore the Radial lines are allowed to use these tracks, they should pay a primary charge to the city covering the interest and depreciation on the investment that the city has been required to make solely for the use of the Radial lines, and this amount is determined in Table IX. In addition to this the Radial Company should pay the city a fair cost of the service furnished by the city, such as the entire operating expense, including maintenance, of such portion of the city's property as is used by the Radial Railways.

# APPENDIX G (Continued)

Table IX.

## Investment in, and Interest and Depreciation on Additional Rails for Radial Systems' Routes

Year	Investment	Interest and Depreciation 10%
1914 ..	\$127,600	
1915 ..	127,600	\$12,760
1916 ..	127,600	12,760
1917 ..	127,600	12,760
1918 ..	127,600	12,760
1919 ..	127,600	12,760
1920 ..	127,600	12,760
1921—8 months ....	127,600	9,507
Total		\$86,01

The Capital Cost of above is included in Table II.

Minimum Net Income of Consolidated System, after charging Radial System with Capital Cost of additional rails for their use.

The above income is subject to increase by whatever proportion of general and other charges the Radial Companies shall bear under their operating agreement.

## APPENDIX G (Continued)

Table X.

Table X. shows the total income to the city from the operation of the Consolidated system, and is obtained by adding the net surplus from earnings as shown in Table VIII. to the income from the Radials as shown in Table IX.

# APPENDIX G (Continued)

Table X.

## Total Net Income to City

Year	Net Surplus from Earnings	Interest and Depreciation on Additional Rails for Radial Routes	Total Income
1913—6 months .....	\$ 862,070		\$ 862,070
1914 .....	1,889,790		1,889,790
1915 .....	2,074,741	\$12,760	2,087,501
1916 .....	2,278,646	12,760	2,291,406
1917 .....	2,504,789	12,760	2,517,549
1918 .....	2,755,547	12,760	2,768,307
1919 .....	3,032,967	12,760	3,045,727
1920 .....	3,340,578	12,760	3,353,338
1921—8 months .....	2,541,090	9,507	2,550,597
Total	\$21,280,218	\$86,067	\$21,366,285

## APPENDIX G (Continued)

Table XI.

Table XI. shows certain comparative statistics with regard to the system as a whole, namely, "The Population Served," "Miles of Track," "Population per Mile," "Miles of Track per Thousand Inhabitants," "Total Investment," "Gross Receipts," "Gross Receipts per Mile of Track," "Gross Receipts per Capita," "Investment per Dollar of Gross Receipts."

This table shows the relative variations of the various quantities therein tabulated during the period between the years 1912 and 1921, and is prepared for the purpose of testing the reasonableness and fairness of the various quantities assumed, such as the track mileage with its dependent total investment, as well as the estimated gross receipt to be estimated during the remaining period.



# APPENDIX G (Continued)

## Table XI.

### Comparative Statistics of Consolidated System

Year	Population	Miles of Track	Population per Mile of Track	Miles of Track per Thousand Inhabitants
*June 30, 1913	430,025	119.0	3,614	.277
1913	442,550	147.3	3,004	.333
1914	469,100	167.9	2,794	.358
1915	497,250	193.7	2,567	.390
1916	527,080	211.2	2,496	.402
1917	558,710	224.2	2,492	.402
1918	592,230	238.2	2,486	.402
1919	627,770	252.2	2,489	.402
1920	665,430	267.2	2,490	.402
1921	705,358	283.2	2,491	.402

\* The Toronto Railway Company only.

Year	Total Cost New Physical Property	Estimated Gross Receipts	Gross Receipts per Mile of Track	Gross Receipts per Capita	Investments per \$1.00 of Gross Receipts
*June 30, 1913	\$13,532,993	\$ 5,747,693	\$48,300	13.37	2.35
1913	15,274,993	6,047,336	41,055	13.66	2.53
1914	17,944,283	6,712,543	39,979	14.31	2.67
1915	19,879,983	7,450,923	38,466	14.98	2.67
1916	21,900,658	8,270,525	39,160	15.69	2.65
1917	23,282,260	9,180,283	40,947	16.43	2.54
1918	24,768,216	10,190,114	42,780	17.21	2.43
1919	26,254,172	11,311,027	44,849	18.02	2.32
1920	27,844,482	12,555,240	46,988	18.87	2.22
1921	** 29,539,146	** 13,936,316	49,210	19.76	2.12

\* The Toronto Railway Company only.

\*\* Gross Receipts for 6 months=\$9,290,878.

\*\*\* Capital Additions for 6 months=\$1,125,609.

## APPENDIX G (Continued)

Table XII.

In case the City of Toronto does not elect to purchase the railway system, and does elect to continue the operation of the present Civic lines, and in addition thereto, elects to construct the remaining 103 miles of extensions in the outer zone as shown on Table I, the city will incur the expense not only of the interest and depreciation on the system thus enlarged, but as well the operating deficit which may accrue from the operation of the outlying parts of the system. The first of these items is computed in Table XII. in which the investment is shown starting with the investment of \$1,251,000, as of June 30, 1913, with additions amounting to \$200,000 on the present lines, as estimated by Mr. Harris, distributed throughout the time, and additional investment amounting to \$8,130,457, distributed throughout the years 1914 to 1921, this being the cost of the additional 103 miles at an average cost of \$83,247, as estimated by Mr. Harris. The total fixed charge on the system thus extended is estimated at an interest rate of 5 .

# APPENDIX G (Continued)

## Table XII.

**Fixed Charge on Civic Lines with Extensions thereto, Outside Old City Limits, Assuming Construction and Operation thereof Independent of the Toronto Railway Company System**

Year	ANNUAL INCREASE IN INVESTMENT		Total Investment	Fixed Charge \$%
	Lines	Extensions		
1913—June 30			\$1,251,000	
1913—6 months	\$12,500		1,263,500	\$ 31,275
1914	25,000	\$ 832,470	2,120,970	63,175
1915	25,000	749,223	2,895,193	106,048
1916	25,000	998,964	3,919,157	144,760
1917	25,000	1,082,211	5,026,368	195,958
1918	25,000	1,165,458	6,216,826	251,318
1919	25,000	1,165,458	7,407,284	310,841
1920	25,000	1,248,705	8,680,989	370,364
1921—8 months	12,500	887,968	9,581,457	289,366
Totals	\$200,000	\$8,130,457		\$1,763,105

Above based on investment cost per mile of existing civic system reported by Mr. Harris at \$83,247.

## APPENDIX G (Continued)

Table XIII.

Table XIII. shows the miles of track in the outer zone which it is assumed that the city will build in case it does not buy the Toronto Railway, and increases its track mileage from the present mileage of 17.4 miles to 120.4 miles at the end of the period considered.

The annual deficit per mile from operation of \$3,044 is based on Mr. Harris' estimate of the operating deficit reduced to the average deficit per mile of track per year. With these two factors the annual operating deficit is obtained as shown in the last column of this table.

# APPENDIX G (Continued)

Table XIII.

## Operating Deficit on Civic Lines with Extensions thereto Outside Old City Limits Assuming Construction and Operating thereof independent of the Toronto Railway Company System

Year	Miles of Track	Annual Deficit per Mile	Operating Deficit
1913—6 months .....	17.4	\$3,044	\$ 26,483
1914 .....	27.4	3,044	82,406
1915 .....	36.4	3,044	110,802
1916 .....	48.4	3,044	147,330
1917 .....	61.4	3,044	186,902
1918 .....	75.4	3,044	229,518
1919 .....	89.4	3,044	272,134
1920 .....	104.4	3,044	317,794
1921—8 months .....	120.4	3,044	244,332
Total			\$1,618,701

NOTE.—The above annual deficit per mile is based on Mr. Harris' Report of Operating Deficit on Existing Civic System.

## APPENDIX H

**Summary of accumulated value at 31st August, 1921, of estimated nett surplus of Consolidated Railway System after providing for all fixed charges. Interest taken at  $4\frac{1}{2}\%$  per annum as from 31st December each year.**

Year	Total Nett Income from Table X.	Total Fixed Charges from Table VI.	Total Nett Surplus	Accumulated Value at $4\frac{1}{2}\%$ at 31st Aug., 1921
1913—6 months	\$ 862,070	\$ 526,275	\$ 335,795	\$ 470,679
1914	1,889,790	1,077,100	812,690	1,090,084
1915	2,087,501	1,210,565	876,936	1,125,605
1916	2,291,406	1,307,349	984,057	1,208,713
1917	2,517,549	1,408,383	1,109,166	1,303,715
1918	2,768,307	1,477,463	1,290,844	1,451,923
1919	3,045,727	1,551,761	1,493,966	1,600,930
1920	3,353,338	1,626,059	1,727,279	1,779,097
1921—8 months	2,550,597	1,137,049	1,413,548	1,413,548
<b>Total</b>	<b>\$21,366,285</b>	<b>\$11,322,004</b>	<b>\$10,044,281</b>	<b>\$11,451,394</b>
				Say \$11,500,000

Subject to increase by extra income from Radial lines in respect of running rights over System to central terminus in City.

## APPENDIX I

**Summary of accumulated amount of deficits at 31st August, 1921, of the enlarged Civic Car System if built and operated independent of Toronto Railway System. Interest taken at 5% from 31st December each year.**

Year	Operating Deficit from Table XIII.	Fixed Charges from Table XII.	Total Deficit	Accumulated Deficit at 5% Interest at 31st Aug., 1921
1913	\$ 26,483	\$ 31,275	\$ 57,758	\$ 83,980
1914	83,406	63,175	146,581	202,981
1915	110,802	106,048	216,850	285,986
1916	147,330	144,760	292,090	366,869
1917	186,902	195,958	382,860	457,979
1918	229,518	251,318	480,836	547,792
1919	272,134	310,841	582,975	632,528
1920	317,794	370,364	688,158	711,096
1921	244,332	289,366	533,698	533,698
Total	\$1,618,701	\$1,763,105	\$3,381,806	\$3,822,909

NOTE:—Provision for annual Sinking Fund payments to extinguish capital cost in 40 years would increase the deficiency at 31st August, 1921, by the additional sum of \$393,670.